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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,898	11/25/2003	David H. Mead	IN-5692	1188
80600 7500 07/18/2008 Harness, Dickey and Pierce, P.L.C. 5445 Corporate Drive Troy, MI 48098				
EXAMINER				
KRUEER, KEVIN R				
ART UNIT		PAPER NUMBER		
1794				
MAIL DATE		DELIVERY MODE		
07/18/2008		PAPER		

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/723,898  
Filing Date: November 25, 2003  
Appellant(s): MEAD ET AL.

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Anna M. Budde  
For Appellants

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed on April 25, 2008 appealing from the Office action mailed June 5, 2007.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellants' statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellants' statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

Claims 7, 10, 11, 13, 16, 17, 25, and 26 are no longer rejected under 35 USC 103(a) as being unpatentable over Stamper (US 4,574,103).

A new grounds of rejection has been applied. Claims 7, 10, 11, 13, 16, 17, 25, and 26 now stand rejected under 35 USC 103(a) as being unpatentable over Stamper (US 4,574,103) in view of Kraft et al (US 4,056,397).

#### **(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

#### **(8) Evidence Relied Upon**

6,416,868	SULLIVAN et al	07-2002
4,574,103	STAMPER et al	03-1986
4,424,292	RAVINOVITCH et al	01-1984
4,056,397	KRAFT et al	11-1977
US 2003/0008959	CRABB et al	01-2003
US 2002/0147246	TAKAI et al	10-2002
US 2002/0177658	TAJIMA et al	11-2002
4,728,677	LACATUS et al	03-1988

#### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 7, 10, 11, 13, 16, 17, 19, 20, and 24, stand rejected under 35 USC 103(a) as being unpatentable over Ravinovitch et al (US 4,424,292) in view of Kraft et al (US 4,056,397).

Ravinovitch teaches a vinyl polymer composition suitable for outdoor use in the sunlight. The heat buildup in articles made from the composition is lowered without changing the UV protection or the color of the articles by employing in the composition an infrared reflective pigment (abstract). The vinyl polymer is a vinyl chloride (col 2, lines 38+) comprising a plasticizer or a mixture of plasticizers (col 3, lines 54+). Suitable plasticizers include phthalates (col 3, lines 54+). The pigment is used in amounts such as to lower the heating of the article without changing the UV protection or color thereof (col 4, lines 18+). Said teaching is understood to read on the limitations of claims 6, 8, 19, and 20 that "a sufficient amount of the pigment is used such that there is essentially no transmittance of light of near infrared wavelength through a coating layer of a desired thickness formed from the plastisol composition. The film may be utilized alone or applied as a capstock to a substrate (col 3, lines 18+). Said structures when used as a vinyl siding are understood to be flexible (see US 4,728,677; col 1, lines 6+).

Ravinovitch does not teach the claimed thickness. However, Kraft teaches the thickness of a film comprising a reflective pigment may be optimized in order to optimize the reflective spectra of the layer. Specifically, Kraft teaches a light reflective white pigment in a binder and teaches the whiteness (herein understood to be synonymous with reflectiveness) of the film can be optimized by optimizing its thickness (col 8, lines

18+). While the teachings of Kraft are drawn to a pigment reflective in the visible region and the teachings of Ravinovitch is drawn to a pigment reflective in the IR region, the examiner takes the position the teachings of Kraft and Ravinovitch are analogous to one another and in the same field of endeavor (reflective pigment containing layers). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to vary the thickness of the infrared reflective pigment-containing layer taught in Ravinovitch. The motivation for doing so would have been to optimize the reflection spectra of the layer.

Ravinovitch also does not teach that the pigment should be included in a sufficient amount so that "there is essentially no transmittance of light of near infra-red wavelength through the film." However, Ravinovitch does teach the pigment reflects the infrared energy (col 1, lines 64+), which is desirable to lower the heating of the article. The courts have held that it is not inventive to discover the optimum or workable range by routine experimentation when the general conditions of the claimed invention are disclosed in the prior art (See MPEP 2141.05). Thus, it would have been obvious to one of ordinary skill in the art to add sufficient pigment in order to block the desired amount of infrared energy. The motivation for doing so would have been to reduce heating of the article.

2. Claims 14 and 18 stand rejected under 35 USC 103(a) as being unpatentable over Ravinovitch et al (US 4,424,292) in view of Kraft et al (US 4,056,397), as applied to claims above, and further in view of Sullivan et al (US 6,416,868) for reasons of record.

Ravinovitch is relied upon as above, but does not teach that the capstock should be applied to a metal substrate. However, Sullivan teaches an IR reflective coating that reduces IR induced heat buildup (abstract). Said coating is useful on wood, glass, ceramic, metal and plastic substrates (col 6, lines 47+). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the coating taught in Ravinovitch to metal siding known in the art. The motivation for doing so would have been that Sullivan teaches IR induced heat buildup is an issue on metal substrates as well as plastic substrates.

3. Claims 7, 10, 11, 13, 16, 17, 25, and 26 stand rejected under 35 U.S.C. 103(a) as being obvious over Stamper et al (US 4,574,103) in view of Kraft et al (US 4,056,397).

Stamper teaches a plastisol grade vinyl chloride polymer containing 50-80pbw plasticizer (col 1, lines 42+). The composition further includes tin oxide and is cast onto a release paper (col 2, lines 21+). A plastisol grade PVC composition containing titanium dioxide is then applied to the first plastisol layer and the resulting laminate is wound onto a take-up roll (col 2, lines 37+). Said layers should each are coated to their desired thickness (col 2, lines 21+). The laminates are understood to be flexible since they can be wound. Said laminates are taught to be applicable to roofs and/or walls (col 3, lines 1+). Said pigments are included in amounts of 2-8pbw (col 1, lines 28+).

The titanium dioxide is known to be IR reflective and is included in amounts to improve weatherability and resistance to sunlight (col 1, lines 28+). Resistance to sunlight is understood to be inclusive of reflecting IR wavelengths. Thus, it would have

been obvious to one of ordinary skill in the art at the time the invention was made to optimize the amount of titanium dioxide utilized in the coating taught in Stamper. The motivation for doing so would have been to optimize the laminate's resistance to sunlight. By doing so, the examiner takes the position that said amounts of titanium dioxide are necessarily adjusted to be included in "sufficient amounts so that there is essentially no transmittance of light of near infrared wavelength through the film."

Stamper teaches the layers should each be coated to their desired thickness and that the laminate should be resistant to weathering and sunlight, but does not teach the claimed thickness. However, Kraft teaches the thickness of a film comprising a reflective pigment may be optimized in order to optimize the reflective spectra of the layer. Specifically, Kraft teaches a light reflective white pigment in a binder and teaches the whiteness (herein understood to be synonymous with reflectiveness) of the film can be optimized by optimizing its thickness (col 8, lines 18+). While the teachings of Kraft are drawn to a pigment reflective in the visible region and the teachings of Stamper is drawn to a pigment reflective in the IR region, the examiner takes the position the teachings of Kraft and Stamper are analogous to one another and in the same field of endeavor (reflective pigment containing layers). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to vary the thickness of the infrared reflective pigment-containing layer taught in Stamper. The motivation for doing so would have been to optimize the reflection spectra of the layer.



## **(10) Response to Argument**

### **I. The combination of Ravinovitch with Kraft**

Appellants argue it would not have been obvious to the skilled artisan to combine Ravinovitch and Kraft in the manner suggested by the examiner. Specifically, Appellants argue neither reference teaches the claimed thickness of the claimed film. The examiner acknowledges neither reference explicitly teaches the claimed thickness but maintains the position that Kraft teaches the thickness of the coating is a result effective variable. Furthermore, the examiner disagrees with appellants' position the capstock of Ravinovitch should have a thickness greater than 450mils. The teachings of Ravinovitch are not limited to the examples disclosed therein but for all that it reasonably discloses. The closest embodiment of Ravinovitch is a substrate with a capstock whereas the examples are drawn to a single layer composite. Furthermore, the skilled artisan would have known capstocks typically have a thickness near the claimed range (see US 2002/0177658-example 1 which teaches a capstock with a thickness of 0.2mm-7.87mils; and US 2002/0147246 (0004 and 0068) which teaches a 0.2mm thick capstock). Since the claimed thickness is typical in the art for capstocks, optimization of the capstock thickness to within the claimed range was well within the knowledge of the skilled artisan.

Appellants further argue the person of ordinary skill in the vinyl siding art would not view photograph material as equivalent to architectural siding or the Kraft patent as instructive for architectural siding. While the teachings of Kraft are drawn to a pigment reflective in the visible region and the teachings of Ravinovitch is drawn to a pigment

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reflective in the IR region, the examiner takes the position the teachings of Kraft and Ravinovitch are analogous to one another and in the same field of endeavor (reflective pigment containing layers). Furthermore, the examiner maintains the position the teachings of Kraft with regards to pigment may be extrapolated to other pigments regardless of the wavelength at which they reflect. Appellants have not convincingly argued as to why such an extrapolation would have been outside the knowledge of the skilled artisan at the time the invention was made.

Appellants further argue the capstock taught in Ravinovitch has a thickness of 450mils (example 1). Said thickness is the thickness of a test panel but there is no teaching in Ravinovitch that the thickness of the capstock should be limited in any way by the example. Furthermore, the test panel does not comprise a coated substrate and, thus, does not represent the closest prior art. Therefore, the examiner maintains the position that it would have been obvious to vary the thickness of said IR reflective pigment layer in order to optimize the film's reflectivity.

According to Appellants, the combination of Ravinovitch and Kraft fails to teach the claimed "essentially no transmittance of light of near infrared wavelength" limitation. The examiner agrees but never took the position that said limitation was anticipated by Ravinovitch. Rather, the position was taken that it would have been obvious to optimize the amount of pigment in order to block the desired amount of IR energy based upon the teachings of Ravinovitch.

Furthermore, Appellants argue the straight forward combination of Kraft and Ravinovitch would have led the skilled artisan to increase the thickness of the capstock

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to the point where there is no IR transmittance. The examiner respectfully disagrees and notes that the skilled artisan would have optimized the thickness and the pigment concentration of the capstock layer in order to obtain the desired light transmittance. The knowledge that thickness and pigment concentration are result effective variables, combined with the knowledge that the typical capstock thickness is near the claimed range would have led the skilled artisan to the claimed invention.

Appellants further argue neither reference includes an appreciation regarding the problems solved by appellants' claims. The examiner respectfully disagrees. Ravinovitch is drawn to the same field of endeavor and the same problem as appellant's invention. Specifically, the reference teaches applying a thin layer of IR reflective coating to a substrate in order to prevent aging and reduce heat build up (col 3, lines 10+).

## II. Claims 14 and 18

Appellants argue the skilled artisan modifying the teachings of Ravinovitch with the proposition from Kraft would produce a capstock layer of greater than 450mils in any attempt to optimize reflectivity and that the Sullivan reference fails to correct this deficiency. Said argument is not persuasive for the reasons noted above.

## III. Stamper

Appellants argue Stamper does not teach a film or layer with a thickness of 2-5mils. The examiner agrees Stamper fails to explicitly teach the thickness limitation. However, Stamper teaches the coating may be applied to the desired gauge. Furthermore, Kraft (as newly applied) teaches said coating thickness is a result effective

variable. Thus, the skilled artisan would have been motivated to optimize the thickness of the IR reflective layer taught in Stamper in order to control the film's reflective properties.

Appellants further argue a skilled artisan would not separate the layers of Stamper. The examiner agrees but does notes the layers do not have to be separated to read on the claimed invention. The claimed film may be present as a layer in a laminate. In such an arrangement, the laminate thickness is not limited in any way; only the thickness of the layer/film is claimed. Thus, the laminate thickness teaching of Stamper seems moot to the question of patentability.

According to Appellants, there is no basis for the examiners' suggestion that the  $\text{TiO}_2$  layer provides essentially no transmittance of light of near IR wavelength. Specifically, appellants argue there is nothing to suggest that the amount of protection required for the layer equates to no transmittance of light near the IR wavelength. The examiner agrees that Stamper fails to anticipate said limitation but took the position said limitation is obvious. Specifically, the titanium dioxide is included in amounts to improve weatherability and resistance to sunlight (col 1, lines 28+). Resistance to sunlight is understood to be inclusive of reflecting IR wavelengths. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the amount of titanium dioxide utilized in the coating taught in Stamper. The motivation for doing so would have been to optimize the laminate's resistance to sunlight. By doing so, the examiner takes the position that the titanium dioxide is necessarily

adjusted to be included in "sufficient amounts so that there is essentially no transmittance of light of near infrared wavelength through the film."

Appellants note that the issues of IR reflectance and reduction of heat buildup are not even contemplated in Stamper. The examiner agrees but notes that the motivation to optimize/modify a reference does not have to be the same as appellants' stated motivation. Stamper teaches the outer layer should provide the laminate with resistance to UV light and, therefore, it would have been obvious to the skilled artisan to optimize the thickness and pigment concentration of the layer in order to optimize the film's UV resistance properties.

The prior art made of record and not relied upon is considered pertinent to appellant's disclosure. US 2003/020041 (0054) and US 2003/0103017 (0007) teach that pigment concentration and thickness each can be optimized in order to optimize the reflectance of a pigmented layer.

#### **(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

This examiner's answer contains a new ground of rejection set forth in section (9) above. Accordingly, appellants must within **TWO MONTHS** from the date of this answer exercise one of the following two options to avoid *sua sponte* **dismissal of the appeal** as to the claims subject to the new ground of rejection:

(1) **Reopen prosecution.** Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFR 1.111 with or without amendment, affidavit or other evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of rejection. A request that complies with 37 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

(2) **Maintain appeal.** Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply brief must address each new ground of rejection as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR 41.39(b)(2) is accompanied by any amendment, affidavit or other evidence, it shall be treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extensions of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for ex parte reexamination proceedings.

Respectfully submitted,

/Kevin R Kruer/

Primary Examiner, Art Unit 1794

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**A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (9) above by signing below:**

/Gregory L Mills/

Supervisory Patent Examiner, Art Unit 1700

Conferees

/Rena L. Dye/

Supervisory Patent Examiner, Art Unit 1794

/Carol Chaney/

Supervisory Patent Examiner, Art Unit 1794